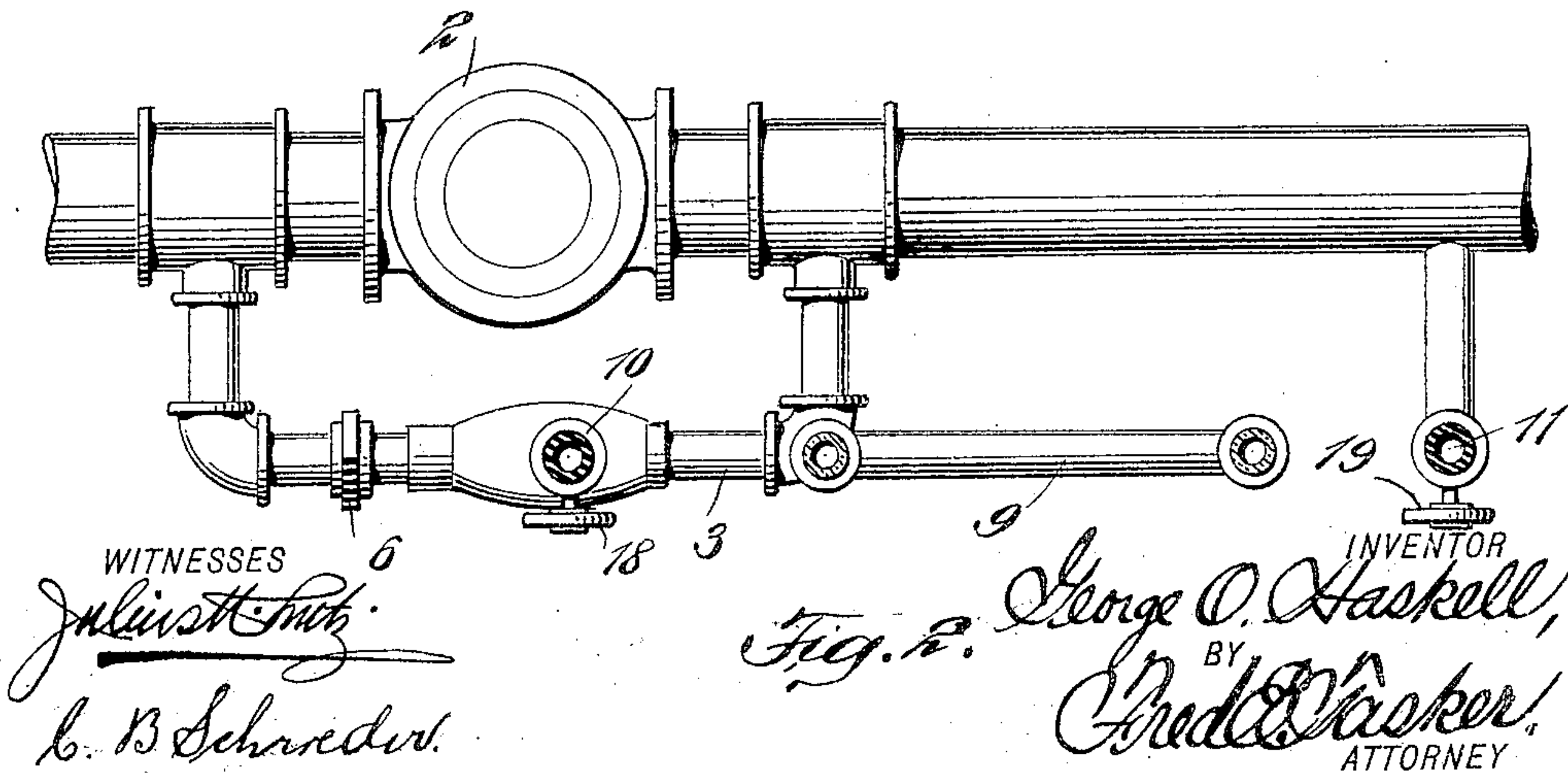
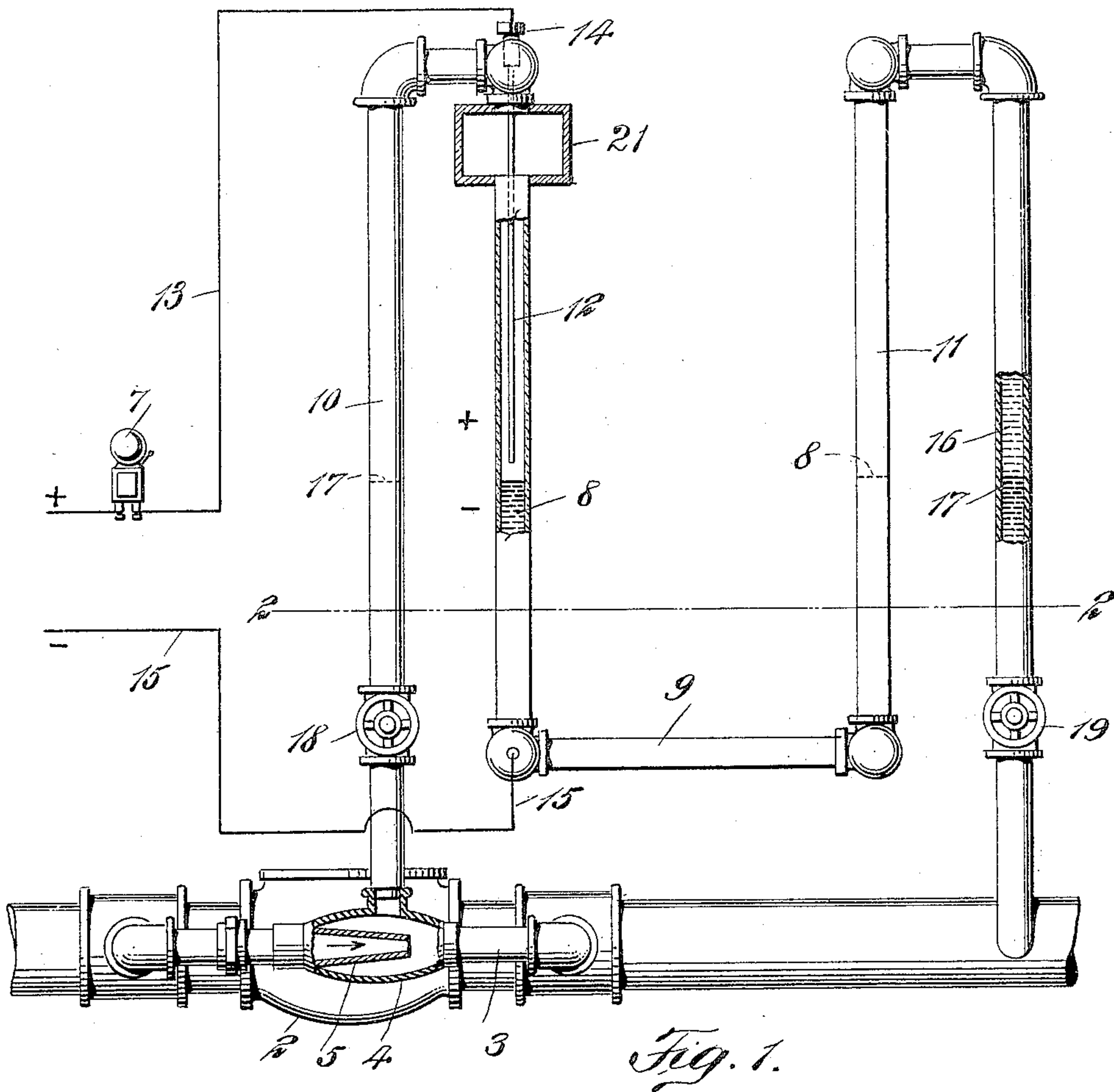


G. O. HASKELL.
 AUTOMATIC ALARM FOR SPRINKLER SYSTEMS.
 APPLICATION FILED APR. 1, 1908.

914,569.

Patented Mar. 9, 1909.
 2 SHEETS—SHEET 1.



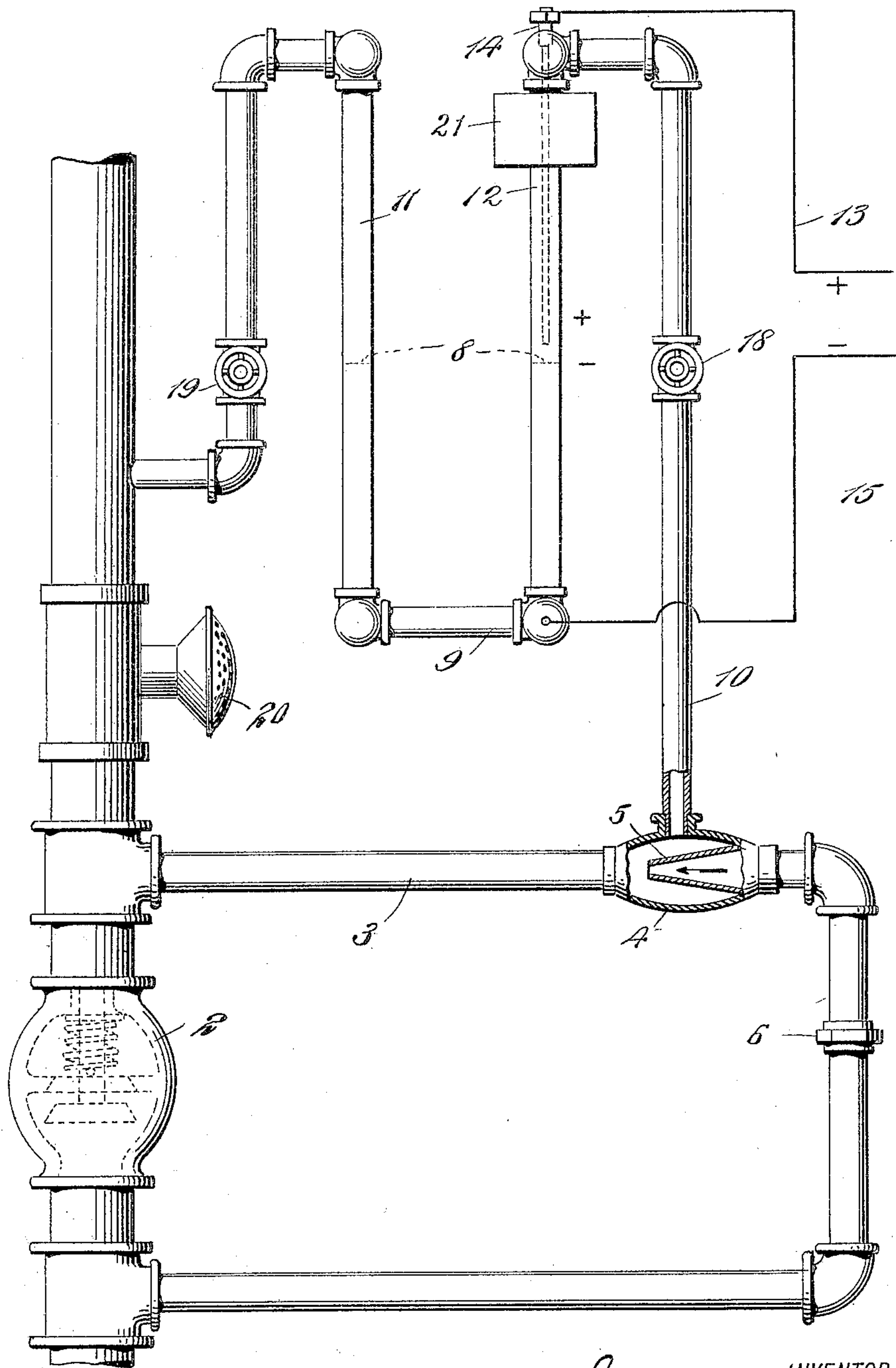
WITNESSES
Julius H. Smith
C. B. Schneider

INVENTOR
George O. Haskell
 BY
Fred W. Cooper
 ATTORNEY

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2 SHEETS—SHEET 2.



WITNESSES
Julius H. Schutz
L. B. Schneider

Fig. 3. *George O. Haskell*, INVENTOR.
 BY *Fred W. Parker*, ATTORNEY.

UNITED STATES PATENT OFFICE.

GEORGE O. HASKELL, OF NEW YORK, N. Y.

AUTOMATIC ALARM FOR SPRINKLER SYSTEMS.

No. 914,569.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed April 1, 1908. Serial No. 424,495.

To all whom it may concern:

Be it known that I, GEORGE O. HASKELL, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Automatic Alarms for Sprinkler Systems, of which the following is a specification.

This invention relates to an automatic alarm adapted to be applied to an automatic sprinkler system for the purpose of giving notice in case a sprinkler head anywhere in the system should be discharged; and my invention consists in the peculiar features and combinations of parts more fully described hereinafter and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side-view of my complete invention as applied to a vertical water pipe or "riser", parts being cut away to disclose the interior. Fig. 2 is also a side-elevation of my complete invention as applied to a horizontal water pipe, parts being cut away as in the preceding figure, and Fig. 3, a top view through the line 2, 2 of the preceding figure.

The numeral 1 indicates the normally closed supply pipe or riser of any ordinary automatic sprinkler system such as that from which branch-pipes provided with sprinkler-heads are adapted to be run.

2 is a check-valve interposed in the riser. This valve should be weighted more or less in order to act only under the influence of a rapid flow of the water when one sprinkler is in action, but to remain normally inactive.

Water is diverted around the valve by means of a by-pass or runaround 3, consisting of a pipe of smaller diameter which lies in the plane of the supply-pipe and is large enough to supply a sprinkler head. This arrangement prevents the main valve from becoming empty, because the by-pass will supply sufficient water to replace that which is taken off by the discharge from one sprinkler-head. The by-pass is made up of pipe larger than is necessary to supply the sprinkler-head, but inserted in it is a suction T-connection 4 through which the water passes with a velocity equal to that of the water passing out of the sprinkler-head. This T-connection 4 consists of a substantially oval horizontal shell containing a tapering suction nozzle 5 extending longitudinally into

the shell for a distance equal to about two-thirds the length of the latter.

6 represents a coupling which secures the T-connection in place. The longitudinal axis of the nozzle is coincident with that of the T-connection, and the kinetic energy imparted to the current in the by-pass reduces the static pressure at said connection below the static pressure in the supply-pipe. This difference in static pressures is utilized to actuate an electric alarm 7 through the medium of the rise or fall of a column of quicksilver 8, in a U-tube 9 hung between a pair of auxiliary valved upright pipes 10 and 11 having their lower ends connected respectively with the by-pass and supply-pipe.

The left-hand upright pipe 10 is attached to the T-connection at a point just above and back of the discharge end of the suction nozzle 5.

12 is a long wire forming the positive terminal of an electric circuit 13, which terminal is hung in an insulator 14 at the top of the left-hand leg of the U-tube, the negative circuit 15 being in electrical connection with the quicksilver 8 below which it acts as the positive terminal and forms a part of the electric circuit. An air space 16 is left between the upper ends of the columns of quicksilver, the right-hand upright pipe 11 being cut away to show the water level at 17 in the upright pipes 10 and 11.

Valves 18 and 19 at the lower ends of the upright pipes permit the water to be shut off when desired. To prevent the quicksilver from being driven out of the U-tube by abnormal pressure, I interpose a retaining box 21 at the top of the right-hand leg 12 of the U-tube 9.

Thus constructed the operation of my device may be stated as follows: Normally the water in the riser and in the by-pass have the same static pressures, the columns of mercury being in a state of equilibrium and at the same height. The water in the upright pipes also stands at the same height. The positive terminal 12 of the electric circuit hangs a short distance above the surface of the mercury. When a sprinkler head discharges and water flow is set up in the riser, the check valve is brought into action to check the flow, which checking results in diverting the flow of the water into the by-pass. The water then enters the conical nozzle in the T-connection. The discharge from this

nozzle accelerates the water in the connection beyond the nozzle and creates suction on the water column in the upright pipe 10, drawing the water down and reducing the static pressure in the by-pass and said column. The stream continuing reenters the supply pipe on the opposite side of the check valve. There the static pressure is greater than in the by-pass and raises the water column in the upright pipe 11 a distance equal to the fall of the other water column. The pressure of the air or gas or oil, or any other insulating fluid, which is trapped between the two water columns and the mercury are correspondingly affected, lowering the mercury in the right leg of the U-tube and raising it in the left leg, where it comes in contact with the wire terminal 12 suspended therein. This completes the electric circuit and sounds the alarm. The U-tube containing the mercury, together with the water-column pipes, constitute in general construction what may be conveniently termed a hydrostatic differential which might be made in various ways to effect the same results.

It is obvious that my device could be changed in many ways that might suggest themselves to those skilled in the art, therefore I do not limit myself to the exact construction herein shown and described, but consider myself entitled to all such variations as come within the scope and spirit of my invention.

What I claim is:

1. In an automatic sprinkler-alarm, the combination with a riser or supply pipe normally closed and provided with a valve, a releasable sprinkler head, a by-pass around said valve, a suction device, an auxiliary connection between the by-pass and supply pipe, and a U-tube containing a movable electrical conductor actuated to sound an alarm by the variation of the static pressure in said tube upon the discharge of the sprinkler head, substantially as described.

2. In an automatic sprinkler alarm, a nor-

mally closed supply pipe provided with a by-pass having a suction device, in combination with pipes connecting the by-pass with the supply pipe, and a U-tube containing quick-silver, unbalanced by the flow of the water in said pipe and by-pass, for actuating an alarm, substantially as described.

3. In an automatic sprinkler alarm, a supply pipe provided with a by-pass having a suction T-connection, in combination with upright auxiliary pipes having their lower ends in connection with the by-pass and supply pipe respectively, a U-tube in communication with the upper ends of said upright pipes and containing mercury, and an alarm device actuated by the movement of the mercury, substantially as described.

4. In an automatic sprinkler alarm, the combination with a normally closed supply pipe and releasable sprinkler-head, of a by-pass in connection therewith, a hydrostatic differential in communication with the by-pass and affected by the movement of the fluid in said pipe and by-pass, an electrical conductor within the differential, an electric circuit adapted to be closed by the movement of said conductor, and an electric alarm device included within said circuit, whereby the releasing of a sprinkler-head will sound an alarm.

5. In an automatic sprinkler alarm, a supply pipe provided with a by-pass having a suction T-connection, in combination with upright auxiliary pipes having their lower ends in connection with the by-pass and supply pipe respectively, a U-tube in communication with the upper ends of said upright pipes, and containing mercury, and an alarm device actuated by the movement of the mercury, substantially as described.

Signed at New York, N. Y. this 17 day of March 1908.

GEORGE O. HASKELL.

Witnesses:

EDW. EBOLS,
JOHN MURRAY.